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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/550,331	04/14/2000	Tatsuya Tanaka	0023--1785-3	8740

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EXAMINER

TRAN, LEN

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 02/13/2002

13

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/550,331

Applicant(s)

TANAKA ET AL.

Examiner

Len Tran

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 2, 3, 5, 7, 17, 21-23, 24, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 01166874.

JP '874 discloses an injection molding apparatus comprise of a chamber, an extrusion screw located substantially vertical, a cooling unit, a connection member having a first internal channel in a vertical direction and a second channel in a horizontal direction, a nozzle at the end of the connection member, a hopper, and a clamping device for the plates (figures). The screw extruder is in an axial direction and the plunger in the horizontal position.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '874.

JP '874 discloses the claimed invention above, but fails to teach the joined portion is rounded, screw compression ratio is 1, and the screw segments has higher temperature creep strength to resist the molten metal.

However, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to have a compression ratio of 1, since the related arts teach extrusion resulting in compression of the molten metal. Therefore, it would have depended on the design expediency and regarding to time constraint, increasing or decreasing compression ratio would result in fast or slow production of the metal product.

In addition, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to have a compression ratio of 1, since it has been held that an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

Furthermore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the screw extruder having a higher creep temperature than the molten metal in order to prevent the screw from melting.

5. Claims 4, 6, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '874 as applied to claim 25 above in paragraph 2, and further in view of Kono (US '372).

JP '874 discloses the claimed invention above, but fails to teach the joined connection to be rounded, and a valve at the first channel and second channel.

However, Kono discloses a rounded joint between the first and second channel with a valve (60) in order to prevent molten metal from flowing backwards to the first channel.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to a rounded joint and a valve as taught by Kono, in JP '874 in order to prevent backflow of the molten metal.

6. Claims 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '874 in view of Kono (US '372) as applied to claim 25 above in paragraph 2, and further in view of Rock (US 3,773,098).

JP '874 and Kono disclose the claimed invention above, but fail to mention a static mixer disposed in the nozzle. Kono discloses a heating member disposed at the periphery of the nozzle for setting the temperature of the light metal for forming a solid plug (col 4, lines 46-57), but fails to disclose a static mixer in the nozzle.

Rock discloses a static mixer with stirring blades connected in front of a nozzle (figure 4, col 1, lines 23-33) for the purpose of having efficient and uniform mixing at the nozzle prior to the mold for producing the final product.

Therefore, it would have been obvious to one of ordinary skill in the art to provide a static mixer as taught by Rock, JP '874 and Kono because it allows efficient and uniform mixing prior to molding.

7. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '874 as applied to claim 25 above in paragraph 2, and further in view Mercer, II et al (US 5,388,633).

As to claims 18 and 20, JP '874 fails to disclose a melting furnace for heating the solid material into molten metal and a supply unit for supplying the molten metal in the melting furnace by way of a supply pipeline shielded with an inert gas to the hopper; a level sensor for detecting the surface height and a control device for controlling the amount of the molten metal supplied to the hopper based on the signal from the level sensor.

Mercer, II et al discloses a melting furnace (10) for heating molten metal and being located substantially at the identical ground level with that of clamping device (68), and a molten metal supply unit for supplying the molten metal in the melting furnace (10) by way of a supply pipeline shielded (16) with an inert gas to the injection sleeve (col. 8, lines 64-69).

Although Mercer, II et al teaches molten metal deliver to the injection sleeve, it would also have been capable of supplying to a hopper and then to the injection sleeve, wherein both concept would result in the same outcome.

Mercer, II et al teaches the above differences in order to meet the demands of rapid and consistent fabrication of high quality die cast parts (col. 3, lines 41-44).

Therefore it would have been obvious to one of ordinary skill in the art to have provide Mercer, II et al's apparatus in JP '874 in order to achieve rapid and consistent fabrication of high quality die cast parts.

As to claim 19, although, Mercer, II et al did not teach a level sensor for detecting surface height in a hopper, and a control device for controlling the amount of molten metal supplied to the hopper based on the signal from the level sensor. However, Mercer, II et al teaches measuring the amount of molten metal supplying into the shot sleeve, and a control device for controlling the amount of the molten metal supplied from the melting pot to the shot sleeve (col. 11, lines 54-69 through col. 12, lines 1-11).

Therefore, with this disclosure, one of ordinary skill in the art at the time applicant's invention was made to use Mercer, II et al's control device in either arrangement and would result in the same final result.

### ***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (703)605-1175. The examiner can normally be reached on M-F, 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 703-308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3602 for regular communications and (703)305-3602 for After Final communications.

Art Unit: 1725

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Len Tran  
Examiner  
Art Unit 1725

LT  
February 6, 2002



**M. ALEXANDRA ELVE**  
**PRIMARY EXAMINER**